LCD8000-70T
User Manual

(For use with RIoTboard)

Embest Technology
www.embest-tech.com

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Hardware/Software Requirements

The following preparations are required to use LCD8000-70T with RIoTboard.

1. Hardware Requirements

- RIoTboard Evaluation Board*1
- 5V Power Adapter*1
- LCD8000-70T LCD Module*1
- UART8000-U Cable*1
- LCD-Ex Expansion Board*1

2. Software Requirements

- OS: RIoTboard Linux or Android
- Version: Linux SVN2591 or higher; Android SVN2597 or higher
- Download Address: http://www.embest-tech.com/shop/star/riotboard.html

Note:

📖 Please refer to RIoTboard User Manual for image update.

Configurations under Ubuntu

1） Connecting LCD8000-70T to RIoTboard needs the help of LCD-Ex expansion board as shown blow;

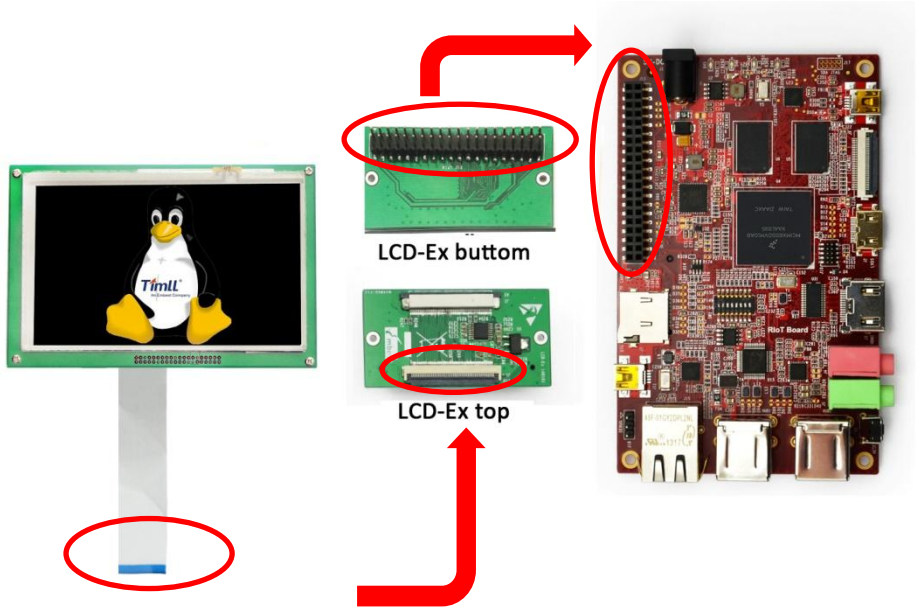

Figure 1 Hardware Connection 1

Note:

- The blue stripe at the end of 50-pin FPC cable should be facing upward when connecting the LCD module to LCD-Ex expansion board.
- LCD8000-70T does not support hot plugging.

2） Use an UART8000-U cable to connect RIoTboard to a PC, and then connect a 5V power adapter to the RIoTboard (but not to mains power yet) as shown below;

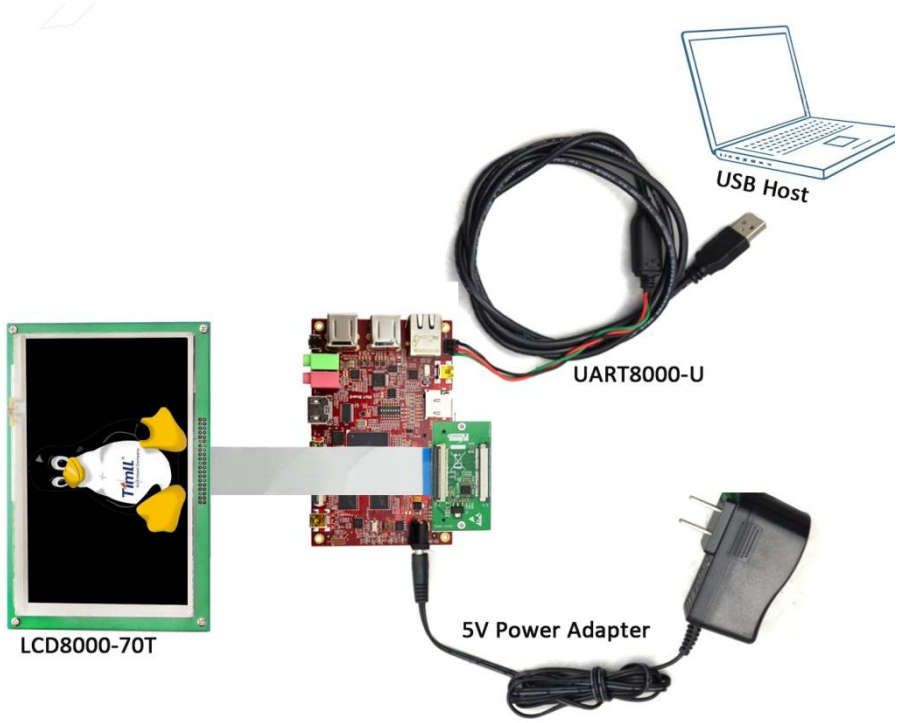

Figure 2 Hardware Connection 2

3） Power on the board to boot the system and press any key on PC's keyboard to enter u-boot when you see "**Hit any key to stop autoboot**" in your terminal window.

Table 1 Information in Terminal Window

```
U-Boot 2009.08-dirty (Oct 17 2013 - 17:08:06)

CPU: Freescale i.MX6 family TO1.1 at 792 MHz
Thermal sensor with ratio = 201
Temperature:     42 C, calibration data 0x5f55765f
mx6q pll1: 792MHz
mx6q pll2: 528MHz
mx6q pll3: 480MHz
mx6q pll8: 50MHz
ipg clock        : 66000000Hz
ipg per clock : 66000000Hz
uart clock       : 80000000Hz
cspi clock       : 60000000Hz
```

```
ahb clock        : 132000000Hz
axi clock     : 198000000Hz
emi_slow clock: 99000000Hz
ddr clock        : 396000000Hz
usdhc1 clock    : 198000000Hz
usdhc2 clock    : 198000000Hz
usdhc3 clock    : 198000000Hz
usdhc4 clock    : 198000000Hz
nfc clock        : 24000000Hz
Board: i.MX6DL/Solo-SABRESD: unknown-board Board: 0x61011 [POR ]
Boot Device: MMC
I2C:     ready
DRAM:     1 GB
MMC:     FSL_USDHC: 0,FSL_USDHC: 1,FSL_USDHC: 2,FSL_USDHC: 3
In:       serial
Out:     serial
Err:     serial
Net:     got MAC address from IIM: 00:00:00:00:00:00
----enet_board_init: phy reset
FEC0 [PRIME]
Hit any key to stop autoboot:    0 (press any key to enter uboot)
MX6Solo RIoTboard U-Boot >
```

4） Execute the following instructions under u-boot mode to set display mode;

- MX6Solo RIoTboard U-Boot > **setenv bootargs console=ttymxc1,115200 init=/init nosmp video=mxcfb0:dev=lcd,7inch_LCD,if=RGB565 video=mxcfb1:off fbmem=10M vmalloc=400M androidboot.console=ttymxc1 androidboot.hardware=freescale calibration**
- MX6Solo RIoTboard U-Boot > **saveenv**

5） Execute the following instruction to remove Synaptics driver under Ubuntu system of RIoTboard;

- root@linaro-ubuntu-desktop:~# **sudo apt-get remove xserver-xorg-input-synaptics**

6） Execute the following instructions to install tslilb;

- root@linaro-ubuntu-desktop:~# **sudo apt-get install xserver-xorg-input-tslib libts-bin**

(Internet connection is required)

In additional, you can download ubuntu-touchscreen.zip from Embest website to install tslib. On unzipping, copy to U-disk and connect U-disk to RIoTboard. Then execute the following instructions:

- root@linaro-ubuntu-**desktop**:~# **dpkg -i libts-bin_1.0-9_armel.deb**
- root@linaro-ubuntu-**desktop**:~# **dpkg -i xserver-xorg-input-tslib_0.0.6-7_armel.deb**

7） Reboot RIoTboard and then execute the following instructions;

- root@linaro-ubuntu-desktop:~# **TSLIB_TSDEVICE=/dev/input/event0**
- root@linaro-ubuntu-desktop:~# **TSLIB_CONFFILE=/etc/ts.conf**
- root@linaro-ubuntu-desktop:~# **export TSLIB_TSDEVICE TSLIB_CONFFILE**
- root@linaro-ubuntu-desktop:~# **ts_calibrate** (finish calibration by following the instructions on the LCD)
- root@linaro-ubuntu-desktop:~# **sync**

Reboot RIoTboard again; The touch screen will work properly.

Configurations under Android

1） Repeat the first four steps in section “Configurations under Ubuntu”;

2） Follow the instructions on the LCD to calibrate the touch screen and then enter Android system.

Note:

- If a LCD8000-43T module has been used under the Android system, the following instructions need to be executed under the system before you replace it with a LCD8000-70T module;
- root@RIoTboard_6solo:/ # **rm /data/system/calibration**
- root@RIoTboard_6solo:/ #**sync**
- The LCD module will work properly after rebooting RIoTboard and finishing screen calibration.

Technical Support and Warranty

Technical Support

Embest Technology provides its product with one-year free technical support including:

- Providing software and hardware resources related to the embedded products of Embest Technology;
- Helping customers properly compile and run the source code provided by Embest Technology;
- Providing technical support service if the embedded hardware products do not function properly under the circumstances that customers operate according to the instructions in the documents provided by Embest Technology;
- Helping customers troubleshoot the products.

The following conditions will not be covered by our technical support service. We will take appropriate measures accordingly:

- Customers encounter issues related to software or hardware during their development process;
- Customers encounter issues caused by any unauthorized alter to the embedded operating system;
- Customers encounter issues related to their own applications;
- Customers encounter issues caused by any unauthorized alter to the source code provided by Embest Technology;

Warranty Conditions

1） 12-month free warranty on the PCB under normal conditions of use since the sales of the product;

2） The following conditions are not covered by free services; Embest Technology will charge accordingly:

- Customers fail to provide valid purchase vouchers or the product identification tag is damaged, unreadable, altered or inconsistent with the products.
- Products are damaged caused by operations inconsistent with the user manual;
- Products are damaged in appearance or function caused by natural disasters (flood, fire, earthquake, lightning strike or typhoon) or natural aging of components or other force majeure;
- Products are damaged in appearance or function caused by power failure, external forces, water, animals or foreign materials;
- Products malfunction caused by disassembly or alter of components by customers or, products disassembled or repaired by persons or organizations unauthorized by Embest Technology, or altered in factory specifications, or configured or expanded with the components that are not provided or recognized by Embest Technology and the resulted damage in appearance or function;
- Product failures caused by the software or system installed by customers or inappropriate settings of software or computer viruses;
- Products purchased from unauthorized sales;
- Warranty (including verbal and written) that is not made by Embest Technology and not included in the scope of our warranty should be fulfilled by the party who committed. Embest Technology has no any responsibility;

3） Within the period of warranty, the freight for sending products from customers to Embest Technology should be paid by customers; the freight from Embest to customers should be paid by us. The freight in any direction occurs after warranty period should be paid by customers.

4） Please contact technical support if there is any repair request.

Note:

📖 Embest Technology will not take any responsibility on the products sent back without the permission of the company.

Contact Information

Technical Support

Tel: +86-755-25635626-872/875/897

Email: support@embest-tech.com

Sales Information

Tel: +86-755-25635626-863/865/866/867/868

Fax: +86-755-25616057

Email: globalsales@embest-tech.com

Company Information

Website: http://www.embest-tech.com

Address: Tower B 4/F, Shanshui Building, Nanshan Yungu Innovation Industry Park, Liuxian Ave. No. 1183, Nanshan District, Shenzhen, Guangdong, China (518055)